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U.S. PATENT APPLICATION

IN THE NAME OF

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**DEVICE FOR CHECKING THE QUALITY
OF SHEETS**

**ENGLISH TRANSLATION OF THE ANNEXES OF THE
INTERNATIONAL PRELIMINARY EXAMINATION REPORT
UNDER PCT ARTICLE 36 (35 USC 371(c)(5))**

Claims as amended during the IPER

1. Device for checking the quality of sheets, wherein each sheet comprises a plurality of copies, comprising a first inspection device (A) for detecting image data of a surface on the front side of the sheets, a second inspection device (B) for detecting image data of a surface on the rear side of the sheets, a third inspection device (C) for illuminating the sheets and an evaluation device for evaluating the quality of the sheets based on the detection result of the inspection devices, characterized in that each inspection device (A, B, C) is assigned its own transport drum (32, 33, 34) for transporting the sheets.

2. Device according to claim 1, characterized in that the transport drums (32, 33, 34) are arranged one after the other in such a way that each sheet, after passing over the first transport drum (32) or second transport drum (33), is passed directly to the respective downstream transport drum (33; 34).

3. Device according to claim 1, characterized in that the first or second inspection device comprises an image sensor (38) and a light source (37) for inspection by reflection.

4. Device according to claim 1, characterized in that the first (A) or second (B) inspection device comprises a device for detecting the intensity of fluorescence.

5. Device according to claim 1, characterized in that the transport drum (34) with which the third inspection device (C) is arranged has a transparent casing, in that the third inspection device (C) comprises an image sensor (44) and a light source (42) for inspection by transmission, and in that the transmission light source (42) is arranged within the transparent casing of the transport drum (34).

6. Device according to claim 1, characterized in that all three transport drums (32; 33; 34) are arranged in a pair of side frame panels (11).

7. Device according to claim 1, characterized in that at least one numbering unit (21; 22) for applying serial numbering to the sheets is arranged downstream of the inspection devices (A, B, C).

8. Device according to claim 7, characterized in that a marking device (46) is arranged on a counter-pressure cylinder (18) of the numbering unit (21; 22).

9. Device according to claim 8, characterized in that the marking device (46) is arranged upstream of the numbering unit (21; 22).

10. Device according to claim 7, characterized in that two numbering units (21; 22) are arranged on a common counter-pressure cylinder (18).

11. Device according to claim 7, characterized in that the numbering unit (21; 22) applies the numbering only to those sheets which have passed the quality check carried out by the inspection devices (A, B, C).

12. Device according to claim 11, characterized in that the numbering unit (21; 22) comprises a plurality of digit wheels which are moved to the next position after each printing operation so as to print a changed number in the subsequent printing operation, and in that the motion of the digit wheels is stopped if a sheet is deemed to be unusable.

13. Device according to claim 7, characterized in that the numbering unit (21; 22) comprises a plurality of digit wheels which are moved to the next position after each printing operation so as to print a changed number in the subsequent printing operation, and in that a device is provided for

monitoring the motion of the digit wheels and for stopping the device if no movement is detected between two printing operations.

14. Device according to claim 1, characterized in that a marking device (46) is arranged downstream of the inspection devices (A, B, C).

15. Device according to claim 8 or 14, characterized in that a sheet to be checked is divided into columns and rows, and in that the marking device (46) marks an edge region of a column and/or row in which the fault is located.

16. Device according to claim 8 or 14, characterized in that a sheet to be checked is divided into columns and rows, and in that the marking device (46) marks a column and outputs the row number in which the fault is located.

17. Device according to claim 8 or 14, characterized in that the marking device (46) applies a marking as unusable to the sheet if the evaluation device deems the quality of said sheet to be insufficient.

18. Device according to claim 8 or 14, characterized in that the evaluation device is designed to individually evaluate the quality of individual copies, and in that the marking device (46) is designed to apply the marking only to or in relation to copies which are deemed to be unusable. ||

19. Device according to claim 8 or 14, characterized in that the marking device (46) applies the marking to the horizontal and vertical edge region of the sheet.

20. Device according to claim 8 or 14, characterized in that the marking device (46) comprises a plurality of ink spray heads.

21. Device according to claim 1, characterized in that arranged downstream of the device is a sheet discharger (26) having at least one stack (27; 28) for sheets which have been deemed to be of sufficient quality, and at least one stack (29) for sheets which have been deemed to be of insufficient quality.

22. Device according to claim 1, characterized in that a further transport drum (36) is arranged downstream of the three transport drums (32, 33, 34) of the inspection devices (A, B, C), which transport drum (36) forms a sheet transfer interface.

23. Device according to claim 22, characterized in that the three inspection devices (A, B, C) and the four transport drums (32, 33, 34, 36) form an inspection module (31) which can be connected to other modules.

24. Device according to claim 22, characterized in that the further transport drum (36) also serves as counter-pressure cylinder.

25. Device according to claim 1 or 22, characterized in that a magnetic field sensor is arranged on one of the transport drums (32, 33, 34, 36).

26. Device according to claim 1, characterized in that a printing unit (12, 16) is arranged upstream or downstream of the inspection devices (A, B, C).

27. Device according to claim 26, characterized in that the printing unit comprises an inking unit (12) and a form cylinder (16) which is supplied with colour by the inking unit (12).